



CHEMISTRY NMDCAT

UHS TOPIC WISE TEST (UNIT- 5)

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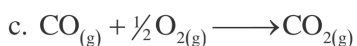
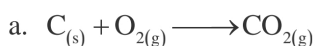
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TOPICS

✓ **Chemical Energetics**

✓ **Electrochemistry**

Q.1 Which one of the following reactions will represent enthalpy of formation as well as enthalpy of combustion



Q.2 For the given reaction, $q = c\Delta T$, the unit of heat capacity will be

a. kJ g^{-1}

b. kJ

c. kJ K^{-1}

d. K kJ^{-1}

Q.3 The amount of heat evolved when one mole of substance is completely burnt in excess of oxygen under standard conditions is known as

a. Enthalpy of formation

b. Enthalpy of dissociation

c. Enthalpy of combustion

d. Enthalpy of ionization

Q.4 Oxidation state of nitrogen in NH_2 and NO_2^+ is respectively

a. -3, +3

b. +3, +5

c. +3, -3

d. -3, +5

Q.5 During electrolysis of dilute aqueous solution of H_2SO_4 , which specie is obtained at anode



Q.6 Consider the following reactions



Calculate the enthalpy of reaction of NO



a. 250

b. -66

c. -250

d. +660

Q.7 Enthalpy of formation for one mole of carbon dioxide is 400 kJ/mol. What will be heat of combustion for 6g of carbon

a. 100kJ

b. 300kJ

c. 200kJ

d. 400kJ

Q.8 Joule is equivalent to

a. 0.4184 Cal

b. 1/4.184 Cal

c. 1 Cal

d. 4.184 Cal

Q.9 During electrolysis of aqueous solution of which salt results in the deposition of metal at cathode





- Q.10** What will be the enthalpy of formation of HBr if hypothetical bond energy of H-H, Br-Br and H-Br are 300 kJ/mol, 100kJ/mol and 250kJ/mol respectively? Reaction is as under $\text{H}_2 + \text{Br}_2 \rightleftharpoons 2\text{HBr}$
- a. -50 kJ/mol
b. +50 kJ/mol
c. -100 kJ/mol
d. +100 kJ/mol



- Q.11** The enthalpy change for a reaction does not depend upon the
- Physical states of reactants and products
 - Use of different reactants for the same product
 - Number of intermediate reaction steps
 - Difference in initial or final temperatures of involved substances.
- Q.12** Change in Oxidation state of Cr in the following reaction is
 $\text{K}_2\text{Cr}_2\text{O}_7 + 7\text{H}_2\text{SO}_4 + 6\text{FeSO}_4 \longrightarrow \text{Cr}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + 3\text{Fe}_2(\text{SO}_4)_3 + 7\text{H}_2\text{O}$
- +12 \rightarrow +6
 - +3 \rightarrow +6
 - +6 \rightarrow +3
 - +6 \rightarrow +12
- Q.13** In which reaction, chlorine is reduced
- $\text{CH}_3\text{Cl} + \text{Cl}_2 \longrightarrow \text{CH}_2\text{Cl}_2 + \text{HCl}$
 - $\text{CH}_3\text{Cl} + \text{KOH}_{(\text{aq})} \longrightarrow \text{CH}_3\text{OH} + \text{KCl}$
 - $2\text{CH}_3\text{Cl} + 2\text{Na} \longrightarrow \text{CH}_3\text{CH}_3 + 2\text{NaCl}$
 - $\text{CH}_3\text{Cl} + \text{H}_2 \longrightarrow \text{CH}_4 + \text{HCl}$
- Q.14** Oxidation is NOT
- Loss of electron
 - Increase in oxidation state
 - Addition of oxygen
 - Decrease in positive charge
- Q.15** Hydrogen gas is NOT liberated when following metal is added to dilute solution of HCl
- Mg
 - Ag
 - Sn
 - Zn
- Q.16** Which is incorrect statement about Daniel cell
- Voltage of cell is 1.10V
 - It is voltaic cell
 - Zn is oxidized by copper
 - Cu is reducing agent
- Q.17** Spontaneous reaction is
- $\text{Pb} + \text{Cu}^{2+} \longrightarrow \text{Cu} + \text{Pb}^{2+}$
 - $\text{H}_2 + \text{Mg}^{2+} \longrightarrow \text{Mg} + 2\text{H}^+$
 - $\text{Br}_2 + 2\text{Cl}^- \longrightarrow \text{Cl}_2 + 2\text{Br}^-$
 - $2\text{Ag} + \text{Cu}^{2+} \longrightarrow \text{Cu} + 2\text{Ag}^+$
- Q.18** When sulphuric acid reacts with two moles of caustic soda, enthalpy of neutralization is
- 114 kJ/mol
 - 114 J/mol
 - 57 kJ/mol
 - 26 kJ/mol
- Q.19** The value of "x" for the given reaction is
 $\text{C}_2\text{O}_4^{2-} \longrightarrow 2\text{CO}_2 + x \text{ electrons}$
- 2
 - 6
 - 4
 - 8
- Q.20** Correct representation of Daniel cell is
- $\text{Zn} / \text{Zn}^{+2} (\text{aq}) 1\text{M} \parallel \text{Cu}^{+2} (\text{aq}) 1\text{M} / \text{Cu}$
 - $\text{Cu}^{+2} (\text{aq}) 1\text{M} / \text{Cu} \parallel \text{Zn} / \text{Zn}^{+2} (\text{aq}) 1\text{M}$
 - $\text{Zn}^{+2} (\text{aq}) 1\text{M} / \text{Zn} \parallel \text{Cu} / \text{Cu}^{+2} (\text{aq}) 1\text{M}$
 - $\text{Cu} / \text{Cu}^{+2} (\text{aq}) 1\text{M} \parallel \text{Zn}^{+2} (\text{aq}) 1\text{M} / \text{Zn}$
- Q.21** Standard hydrogen electrode has the standard reduction potential
- Unity
 - Positive
 - Zero
 - Negative
- Q.22** Which one indicate enthalpy of atomization
- $\text{K}_{(\ell)} \longrightarrow \text{K}_{(\text{g})}$
 - $\text{K}_{(\text{g})} \longrightarrow \text{K}_{(\text{g})}^+$
 - $\text{K}_{(\ell)} \longrightarrow \text{K}_{(\text{g})}^+$
 - $\text{K}_{(\text{s})} \longrightarrow \text{K}_{(\text{g})}$
- Q.23** Which of the following ionic solids has greater lattice energy
- LiF
 - KF
 - NaF
 - CsF



- Q.24** All of the following statements are true about oxidation except
 a. It is zero in free state
 b. It may be negative
 c. It is always equal to valency
 d. It may be in fraction
- Q.25** Conduction due to free ions is called
 a. Electrolytic conduction
 b. Electronic conduction
 c. Metallic conduction
 d. There is no conduction due to free ions
- Q.26** What will be the change in internal energy of system if work done by system is 50kJ and heat absorbed is 140kJ
 a. 190kJ
 b. -190kJ
 c. 90kJ
 d. -90kJ
- Q.27** The enthalpy of atomization of $H_{2(g)}$ [$\frac{1}{2} H_{2(g)} \rightarrow H_{(g)}$] is 218 kJ/mol, the enthalpy of formation of $H_{2(o)}$ from gaseous atom is
 a. -218 kJ/mol
 b. -436 kJ/mol
 c. +436 kJ/mol
 d. +218 kJ/mol
- Q.28** State function is a macroscopic property that depends upon initial and final states but independent of path. Among the following, which is NOT state function
 a. Heat
 b. Temperature
 c. Internal energy
 d. Volume
- Q.29** First law of thermodynamics may be denoted under various conditions as
 a. $\Delta H = \Delta E$ if $\Delta n = 0$
 b. $\Delta E = q_v$ if $\Delta V = 0$
 c. $\Delta H = q_p$ if $\Delta P = 0$
 d. All are correct
- Q.30** Bomb calorimeter is used to measure _____ of food, fuel and organic compound
 a. ΔH_n°
 b. ΔH_c°
 c. ΔH_s°
 d. $\Delta H_{f,E}^\circ$
- Q.31** Using the hypothetical information given in the table below,
- | Reactions | ΔH |
|---|-------------------------|
| $K_{(s)} + \frac{1}{2} Br_{2(l)} \longrightarrow KBr_{(s)}$ | -400kJmol ⁻¹ |
| $K_{(s)} \longrightarrow K_{(g)}$ | +100kJmol ⁻¹ |
| $K_{(g)} \longrightarrow K_{(g)}^+ + e^-$ | +400kJmol ⁻¹ |
| $\frac{1}{2} Br_{2(l)} \longrightarrow Br_{(g)}$ | +100kJmol ⁻¹ |
| $Br_{(g)} + e^- \longrightarrow Br_{(g)}^-$ | -350kJmol ⁻¹ |
- Calculate the lattice energy of formation of potassium bromide.
 a. +672kJmol⁻¹
 b. -672kJmol⁻¹
 c. +650kJmol⁻¹
 d. -650kJmol⁻¹
- Q.32** Enthalpy of neutralization of all the strong acids and strong bases has the same value because
 a. Neutralization leads to the formation of salt and H₂O
 c. Strong acid and bases are ionic substances
 c. Acids always give H⁺ ions and bases always furnish OH⁻ ions
 d. The net chemical change involve the combination of H⁺ and OH⁻ ions to form water
- Q.33** Born-Haber cycle is used to determine the
 a. Lattice energy
 b. Enthalpy of formation
 c. Enthalpy of ionization
 d. Enthalpy of dissociation
- Q.34** When dilute Na₂SO₄ aqueous solution is used as an electrolyte in electrolytic cell the anode product is
 a. Na_(s)
 b. SO_{2(g)}
 c. H_{2(g)}
 d. O_{2(g)}
- Q.35** During refining of copper, impure copper is taken at
 a. Anode
 b. Electrolyte
 c. Cathode
 d. Both A and B
- Q.36** Aluminum can displace _____ ion from its aqueous solution
 a. Na⁺
 b. Li⁺
 c. Ag⁺
 d. Ca²⁺



- Q.37 In an electrolytic cell current flows**
 a. From cathode to anode in outer circuit b. From cathode to anode inside the cell
 c. From anode to cathode outside the cell d. Both "B" and "C"
- Q.38 Li occupies higher position in the ECS of metals as compared to Cu since**
 a. The standard reduction potential of Li^+/Li is lower than that of Cu^{2+}/Cu
 b. The standard reduction potential of Cu^{2+}/Cu is lower than that of Li^+/Li
 c. The standard oxidation potential of Li/Li^+ is lower than that of Cu/Cu^{2+}
 d. Li is smaller in size as compared to Cu
- Q.39 Cathodic reaction during electrolysis of aqueous CuSO_4 is**
 a. $\text{Cu} \longrightarrow \text{Cu}^{2+} + 2\text{e}^-$ b. $4\text{OH}^- \longrightarrow \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^-$
 c. $2\text{H}^+ + 2\text{e}^- \longrightarrow \text{H}_2$ d. $\text{Cu}^{2+} + 2\text{e}^- \longrightarrow \text{Cu}$
- Q.40 In the cell shown below, which of the following is (are) true?**
- I. Electrons flow through the meter from left to right**
II. Cu is the anode
III. The spontaneous reaction is
 $\text{Cu}^{2+} + \text{Zn} \longrightarrow \text{Cu} + \text{Zn}^{2+}$

a. I only b. III only
 c. II only d. I and II
- Q.41 In an operating electrochemical cell the function of a salt bridge is to**
 a. Allow hydrolysis to occur b. Permit the migration of ions within the cell
 c. Allow a non-spontaneous reaction to occur d. Transfer electrons from the cathode to the anode
- Q.42 Which is the correct expression for lattice energy**
 a. $\text{K}_{(\text{s})} + 1/2\text{Cl}_{2(\text{g})} \longrightarrow \text{KCl}_{(\text{s})}$ b. $\text{K}^+_{(\text{g})} + \text{Cl}^-_{(\text{g})} \longrightarrow \text{KCl}_{(\text{s})}$
 c. $2\text{K}_{(\text{s})} + 2\text{Cl}_{2(\text{g})} \longrightarrow 2\text{KCl}_{(\text{s})}$ d. $\text{K}^+_{(\text{g})} + \text{Cl}^-_{(\text{g})} \longrightarrow \text{KCl}_{(\text{g})}$
- Q.43 Internal energy of system will always be positive if**
 a. Reaction is exothermic and work is done by the system
 b. Reaction is exothermic and work is done on the system
 c. Reaction is endothermic and work is done by the system
 d. Reaction is endothermic and work is done on the system
- Q.44 Standard reduction potential of Zn^{+2}/Zn and Ni^{+2}/Ni are -0.76V and -0.25V respectively. Voltage of the cell will be**
 a. + 0.51V b. + 1.01V
 c. -0.51V d. - 1.01V
- Q.45 Stronger the oxidizing agent**
 a. Greater is the standard reduction potential
 b. Greater is the standard oxidation potential
 c. Lesser is the standard reduction potential
 d. Both A and B
- Q.46 Molten CuCl_2 is electrolyzed using platinum electrodes. The reaction occurring at anode is**
 a. $\text{Cu}_{(\text{s})} \longrightarrow \text{Cu}^{2+} + 2\text{e}^-$ b. $\text{Cl}_{2(\text{g})} + 2\text{e}^- \longrightarrow 2\text{Cl}^-$
 c. $\text{Cu}^{2+} + 2\text{e}^- \longrightarrow \text{Cu}_{(\text{s})}$ d. $2\text{Cl}^- \longrightarrow \text{Cl}_{2(\text{g})} + 2\text{e}^-$
- Q.47 For the reactions, keeping pressure constant**
 $\text{C}_3\text{H}_{8(\text{g})} + 5\text{O}_{2(\text{g})} \longrightarrow 3\text{CO}_{2(\text{g})} + 4\text{H}_2\text{O}_{(\text{g})}$ at constant temperature, $\Delta H - \Delta E$
 a. +3RT b. +RT
 c. -RT d. -3RT
- Q.48 Select the wrong statement**
 a. Chemical reaction is breaking of old bonds and making of new bonds
 b. Temperature is the measure of average kinetic energy of the all particles of a system
 c. Non-spontaneous process never happens in the universe
 d. The enthalpy of element in standard state is zero
- Q.49 Which of the following values of heat of formation indicates that the product is least stable.**
 a. -94 kJ b. -231.6 kJ
 c. +21.4 kJ d. +70 kJ
- Q.50 Specie which discharge at anode during electrolysis of aqueous solution of KCl**
 a. OH^- b. O_2
 c. H_2 d. Cl^-



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Chemistry

1- A	11- C	21- C	31- D	41- B
2- C	12- C	22- D	32- D	42- B
3- C	13- A	23- A	33- A	43- D
4- D	14- D	24- C	34- D	44- A
5- A	15- B	25- A	35- A	45- A
6- A	16- D	26- C	36- C	46- D
7- C	17- A	27- B	37- C	47- B
8- B	18- C	28- A	38- A	48- C
9- C	19- A	29- D	39- D	49- D
10- A	20- A	30- B	40- B	50- D

Chem-5